Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

spring plumage, might prove the paler form were to be the immature winter dress, it not for the fact that Professor Brewster, in making his examination, had before him not only his own large collection, but that in the National Museum, to aid him, which must have embraced specimens taken at different seasons of the year.

TURDUS USTULATUS SWAINSONII (Cab.) Olive-backed Thrush. June 6, 1886, I saw several of the birds in the timber skirting Crooked creek, in the northern part of Meade county; probably migrants, but so late in the season I think it worthy of mention.

NOTES ON A RED CEDAR SAW-FLY.*

BY C. L. MARLATT.

In the spring of 1885, during the latter part of April and the first of May, a number of saw-flies were observed about some red cedar trees in a yard near Manhattan. By beating the cedars with a sweep net a number of the insects were secured. The males were much more numerous than the females, and resembled them in little other than shape. In color the males are of a shining black, and are somewhat smaller than the honey-yellow-colored females; the antennæ of the former are broadly pectinate, of the latter minutely serrate. (Fig. 2, *d*, *c*.)

This saw-fly is nearly related to *Lophyrus fulvus* Nort. Specimens lately submitted to Mr. E. T. Cresson, of Philadelphia, are pronounced by him to be probably undescribed. If this saw-fly should prove to be unnamed, it may be called *Lophyrus* (*Monoctenus*) *juniperi*. A full description of both sexes is given below.

No careful search was made for larvæ, and none were found. The flies disappeared early in May.

On the 20th of April, 1886, the flies were again observed by me about the trees before mentioned, and a careful search resulted in finding some of the females depositing eggs in the twigs. Flies were afterward seen ovipositing on the cedars on the College grounds and elsewhere in the neighborhood. The following description of the method of oviposition is based on repeated observations of the female at work.

The fly selects a twig, usually green and new grown, and climbing to the extremity or near it, placing itself with its head away from the trunk, it extends its ovipositor (Fig. 2, *b*), and saws or drills through the scale-like leaf. From six to twelve minutes is occupied in depositing an egg, after which the insect flies to a new twig —but rarely is more than one egg placed in a twig before leaving it. The puncture made in the bract may be detected, though with difficulty, by the minute mass of "saw dust" at the point pierced. The punctured scale afterward dies, turns yellow, and becomes somewhat bulged by the increase of the egg in size—frequently cracking apart sufficiently to allow the egg to be seen. (Fig. 1, *c*.) The whitish oval egg, about $\frac{1}{24}$ of an inch long (Fig. 1, *b*), is found on lifting the scale pierced to be immediately beneath and placed in a direction parallel to it.

The female is much less active than the male, allowing a near approach, and may even be examined through a hand-glass while ovipositing. In early morning or on cool days, both sexes are quite sluggish and may be readily taken. In the warmer portion of the day the males, especially, may be seen flying briskly about the trees, easily taking alarm on a near approach, and when thus alarmed falling—flying off,

---

[*The notes on the life history of this Saw-Fly, and those following on the oviposition of the Buffalo Tree-Hopper, were made while the writer was acting as assistant in the Department of Entomology of the Kansas State Agricultural College; and as forming a part of the report of that department, they are reproduced here by permission.]

however, before reaching the ground. The oviposition of the female begins late in the forenoon, and continues till night, the act being repeatedly observed as late as 7 P. M.

From April 24th to May 13th an effort was made to keep some of the flies in a breeding-cage, to more carefully note their habits. The cage contained potted cedar, *Juniperus virginiana*, and the California redwood, *Sequoia gigantea.* The weather at this time was somewhat cool and stormy, and the flies mostly disappeared from the trees on the grounds. Although the breeding-cage above mentioned was kept in the College greenhouse, the insects did not appear to thrive, became sluggish, and died without depositing eggs, as observed.

MAY 3.—An examination of the eggs, now quite plainly visible, owing to the drying and cracking apart of the scale above them, showed them to contain nearly-formed larvæ, having well-defined segments and minute dark eye-spots. With the return of pleasant weather, the flies again appeared numerously about the cedars, and did not finally disappear before the 12th of May.

MAY 7.—Larvæ observed on terminal twigs near the egg-cases, from which they have evidently just emerged. Length $\frac{1}{8}$ inch; head brownish; eye-spots black; body with 22 feet—6 thoracic and 16 abdominal; color dirty green, having a dark appearance. The back has a transmitted pink tint, and the thoracic region is much swollen —$\frac{1}{5}$ greater in diameter than the abdominal portion; thoracic feet marked with black, appearing entirely black. (Fig. 3, *a.*) A number of larvæ and unhatched eggs were placed in a breeding-cage at this date, and these were added to at various times during the larval period.

MAY 12.—Larvæ first secured (on May 7) enter the first moulting stage. Lengths $\frac{2}{3}$–$\frac{3}{8}$ inch; body smooth, glossy, not slimy; color unchanged, except possibly to a lighter shade. The larvæ were abundant on the cedars at this time, and were observed to eat habitually the ends only of tender twigs.

MAY 18.—Second moulting. Length $\frac{3}{8}$–$\frac{1}{2}$ inch; no change noted in color and form.

MAY 20–22.—Third moulting: ground color of body as before given, marked, however, along the center of the dorsum, and half-way down on either side, by wide longitudinal grayish-black lines extending from the head to the last segment; length $\frac{1}{2}$–$\frac{5}{8}$ inch. (Fig. 3.)

MAY 25–29.—Fourth moulting: the three longitudinal lines above noted are better defined and of a darker color. (Alcoholic specimens of larvæ between the first and second moultings show, on careful examination, traces of these lines, though none were observed on living worms.) The usual pinkish tint of the central dorsal region almost wanting; length $\frac{3}{4}$ inch. The larvæ on the cedars on the grounds are abundant, and conspicuous from their size and color. Those in the breeding-cage are apparently thriving, feeding readily on cedar twigs, and somewhat sparingly on the redwood. When not feeding, the larvæ rest on terminal twigs, with their heads and thoracic regions elevated. If disturbed at any time the head and thoracic are thrown back over the body, and the thoracic feet protruded to their full extent, thus presenting a quite formidable appearance. (Fig. 1.)

On June 10th the larvæ, having attained a length of from 1 to 1$\frac{1}{8}$ inches, began to enter the soil, and by the 15th of July all had thus disappeared, both in the breeding-cage and from the trees on the grounds. Nearly a month's difference will be noted in the oviposition of the earliest and latest eggs, and a corresponding or rather greater variation in the moulting stages of different larvæ, as shown in the time from the beginning of the fourth moulting to the final disappearance of the larvæ from the trees.

July 19.—The soil in the breeding-cage was sifted, and a number of cocoons of this saw-fly, $\frac{5}{16}$ of an inch long by about half as wide, taken from it. (Fig. 1, *a.*) The cocoon consists of two cases: the outer is dark, and covered with soil exteriorly, the inner surface brown-hued and glossy. The inner case is of a firmer texture, and of a showy crimson color, with pearly reflections on the inner surface. The cocoons contained contracted dormant larvæ; and when last examined, February 15, '87, no change had taken place; and it is probable that the pupal stage will be acquired but shortly before the appearance of the mature insects.

My observation of this saw-fly for the last two years leads to the belief that it is on the increase, and may at any time multiply to an injurious extent. With a view to find some easy means to check its ravages, a number of infested cedars were sprayed with a strong kerosene emulsion. About one-fourth of the larvæ died within twenty-four hours after the application; the others were apparently uninjured, though care was taken that all the larvæ should be reached. Experiments will be instituted the coming summer, looking to the discovery of more satisfactory results.

Lophyrus (Monoctenus) juniperi, n. sp.

Female: Luteous yellow, shining; head and thorax slightly tinged with fulvous; a semi-circular line on the vertex covering the ocelli, tips of the mandibles, antennæ, excepting the two basal joints, mark on each side of the mesothorax, lateral scutellar region, tip of scutellum, metathorax, posterior portion of pectus, anterior margin of the basal plates, sides more or less of three or four or more — varying in different specimens — of the basal segments of the abdomen, central portion of the venter, sheaths, and tip of ovipositor, black; antennæ short, serrate, thirteen-jointed, the two basal joints in most cases luteous, tinged with fuscous. (In a few specimens the antennæ were entirely black, and in others and more commonly, the second joint only was luteous.) Mesothorax and scutellum smooth and polished; wings hyaline, iridescent, nervures and stigma black or fuscous, dividing nervure between the first and second submarginal cells hyaline, lanceolate cell contracted in the middle; tips of tarsi fuscous.

Length .35 inch.

Described from thirteen specimens.

Male: Shining black; palpi, sides of prothorax, and base of wings, luteous; antennæ usually seventeen-jointed, (about one-third of the specimens examined having but sixteen joints,) entirely black, and all but the two basal joints strongly pectinate; wings hyaline, iridescent, nervures and stigma black or fuscous, dividing nervure between the first and second submarginal cells hyaline, lanceolate cell contracted in the middle; legs luteous; coxæ, trochanters, and tips of tarsi, fuscous; terminal points of the abdomen and a wide stripe on either side of the venter, luteous.

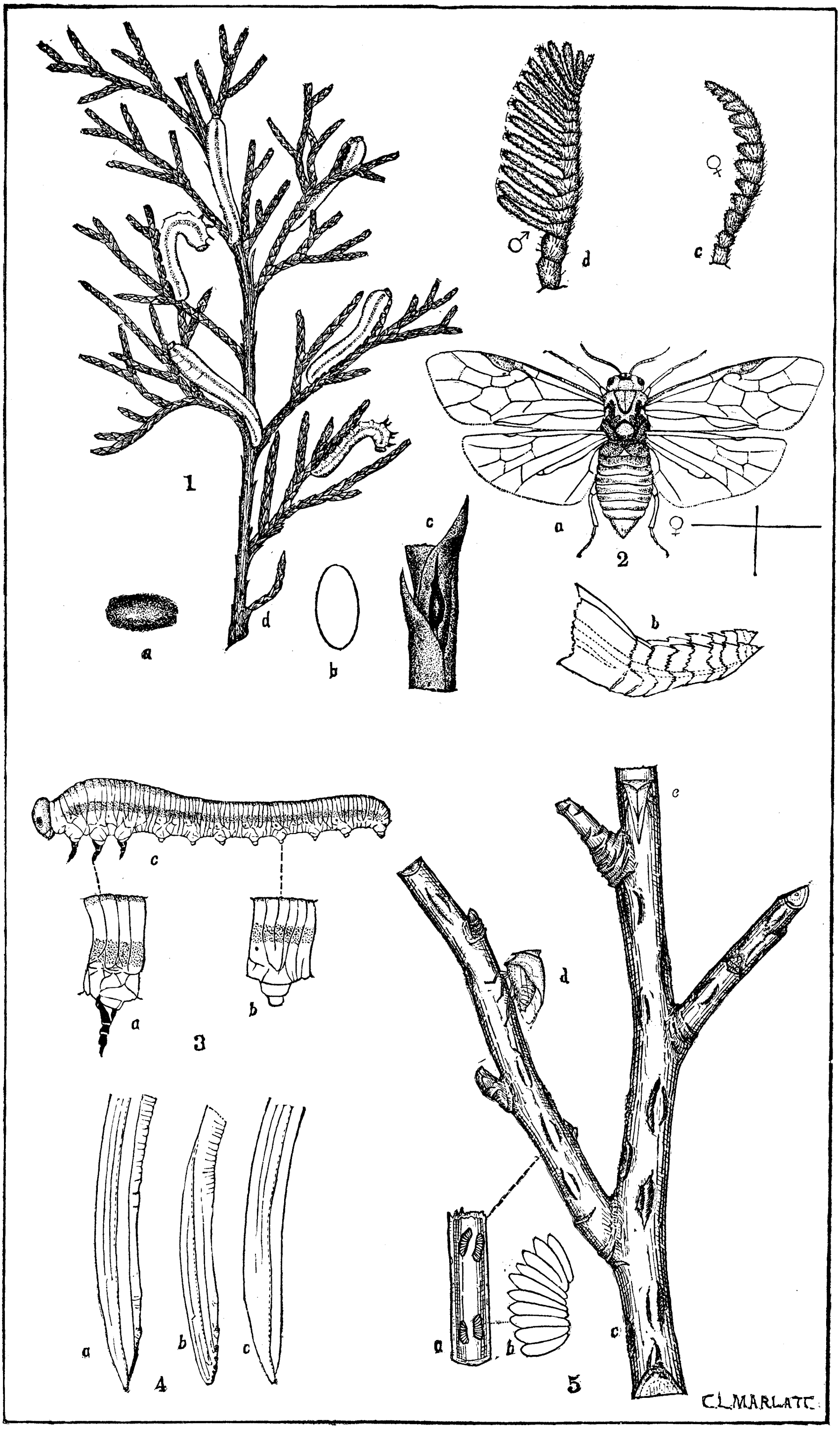
Length .30 inch.

Described from thirty-six specimens.

EXPLANATION OF PLATE.

Red Cedar Saw-Fly.—Figure 1: *a*, cocoon; *d*, branch of cedar with larvæ feeding; *c*, egg in place in cedar leaf; *b*, outline of egg. Fig. 2: *a*, female saw-fly, showing characteristic venation of the wings; *d*, antenna of male; *c*, antenna of female; *b*, ovipositor. Fig. 3: *c*, full-grown larva, twice natural size; *a*, thoracic segment; *b*, abdominal segment. Fig. 1: *a* and *d*, natural size; others variously enlarged.

Buffalo Tree-Hopper.—Fig. 4: *a*, ovipositor in its sheath; *b*, the ovipositor, and *c*, one of the valves of the sheath, shown separately. Fig. 5: *c*, branch of apple, showing, at *d* and *e*, the insect at work, and the wounds made by it; *a*, portion of the bark lifted, showing the egg clusters, one of which is drawn in outline, much enlarged, at *b*.



THE RED CEDAR SAW-FLY, AND THE BUFFALO TREE-HOPPER.
(Figs. 1, 2 and 3 refer to the Saw-Fly ; Figs. 4 and 5 to the Tree-Hopper.)